

FIG. 1

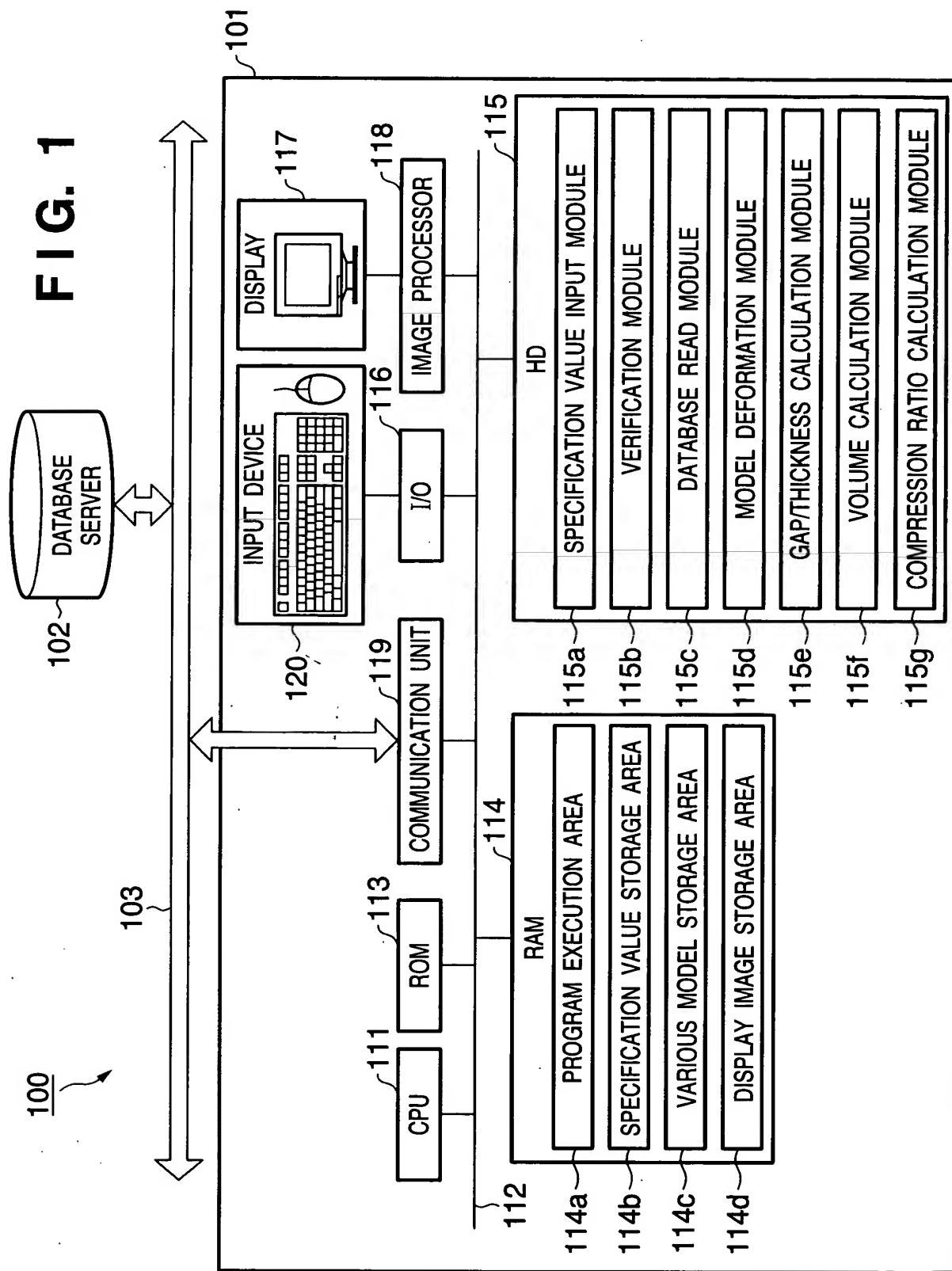
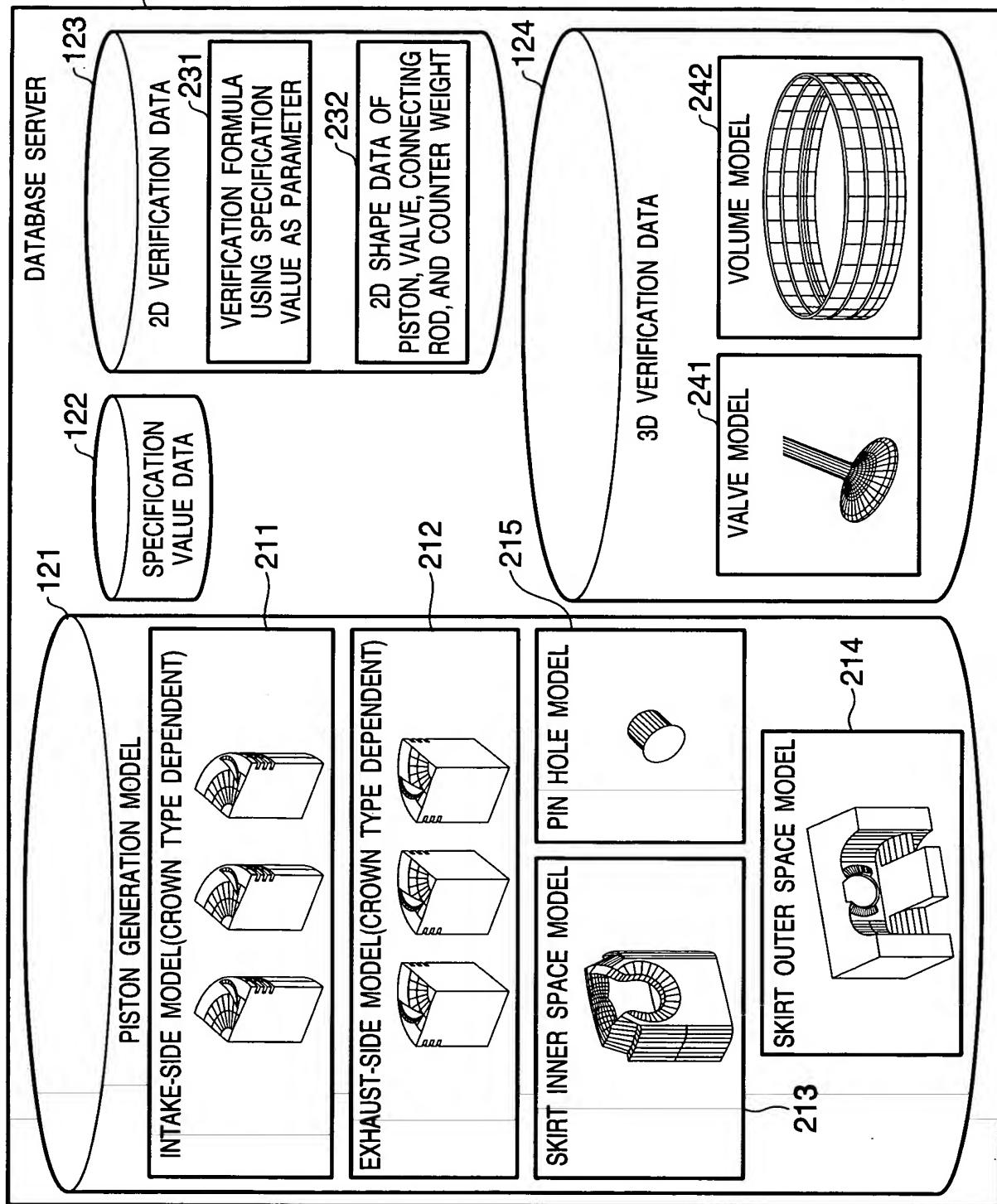


FIG. 2



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FIG. 3

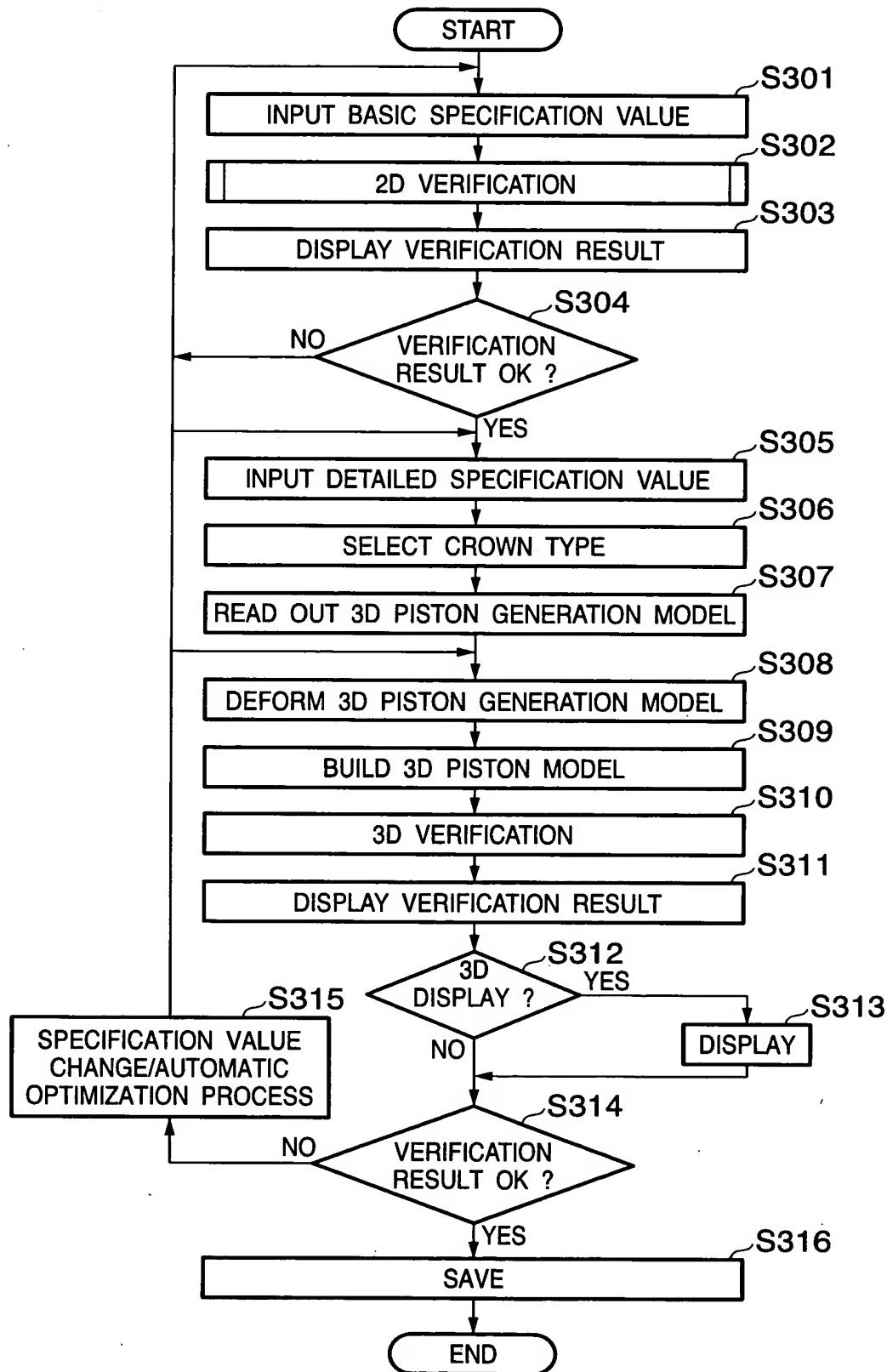


FIG. 4A

SPECIFICATION VALUE INPUT	
TARGET VALUE	TARGET COMPRESSION RATIO : <input type="text" value="* *"/>
	MINIMUM THICKNESS REFERENCE : <input type="text" value="* mm"/> TARGET CLEARANCE REFERENCE : <input type="text" value="* mm"/>
CAM LIFT DATA	INTAKE SIDE : <input type="text" value="* */* * .txt"/> INTAKE SIDE : <input type="text" value="* * °CA"/>
VALVE TIMING	EXHAUST SIDE : <input type="text" value="* */* * .txt"/> EXHAUST SIDE : <input type="text" value="* * °CA"/>
LAYOUT CONDITION	BORE DIAMETER : <input type="text" value="* * mm"/> CONNECTING ROD LENGTH : <input type="text" value="* * mm"/> COMBUSTION CHAMBER CAPACITY : <input type="text" value="* * cc"/> INTAKE VALVE ANGLE : <input type="text" value="* * °"/>
	CRANK DIAMETER : <input type="text" value="* * mm"/> CW VIRTUAL DISK RADIUS : <input type="text" value="* * mm"/> VALVE CENTER HEIGHT : <input type="text" value="* * mm"/> EXHAUST VALVE ANGLE : <input type="text" value="* * °"/>
PISTON SPECIFICATION VALUE	PISTON DIAMETER : <input type="text" value="* * mm"/> INTAKE RECESS CENTER : <input type="text" value="* * mm"/> INTAKE RECESS DEPTH : <input type="text" value="* * mm"/> CROWN THICKNESS : <input type="text" value="* * mm"/>
	EXHAUST RECESS CENTER : <input type="text" value="* * mm"/> EXHAUST RECESS DEPTH : <input type="text" value="* * mm"/>
VALVE SPECIFICATION VALUE	INTAKE VALVE DIAMETER : <input type="text" value="* * mm"/> EXHAUST VALVE DIAMETER : <input type="text" value="* * mm"/>

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FIG. 4B

2D CALCULATION RESULT	
	REFERENCE CALCULATED VALUE
MINIMUM THICKNESS OF SKIRT PORTION	* mm OR MORE TO * mm OR LESS : * mm <ok>
PROXIMAL DISTANCE BETWEEN VALVE AND PISTON INTAKE SIDE EXHAUST SIDE	* mm OR MORE : * mm <ok> * mm OR MORE : * mm <ok>
MINIMUM GAP BETWEEN CONNECTING ROD AND CROWN BACK SIDE(FLAT TYPE BASE)	* mm OR MORE : * mm <ok>
MINIMUM VALUE BETWEEN COUNTER WEIGHT AND PISTON	* mm OR MORE : * mm <ok>

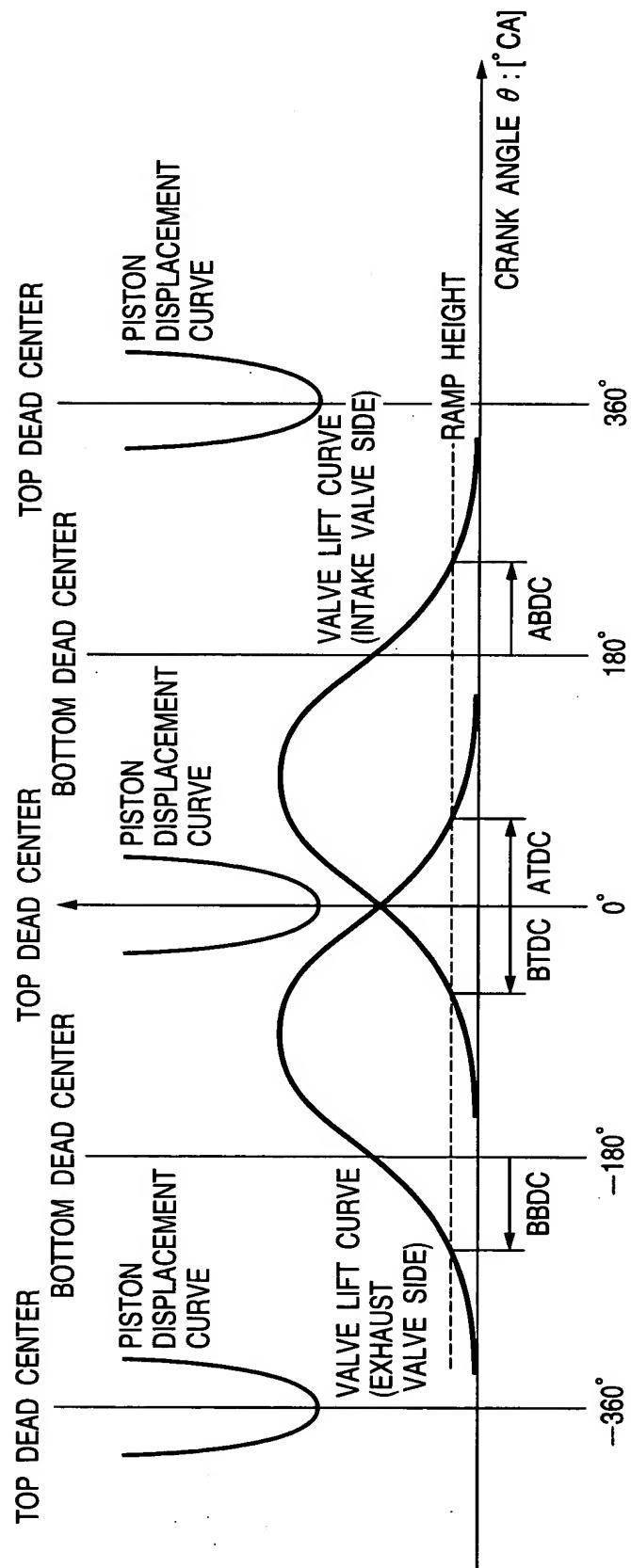
411 412 413

3D VERIFICATION(FLAT) 3D VERIFICATION(CONVEX TYPE) 3D VERIFICATION(CONCAVE TYPE)

RE-INPUT DIMENSIONS

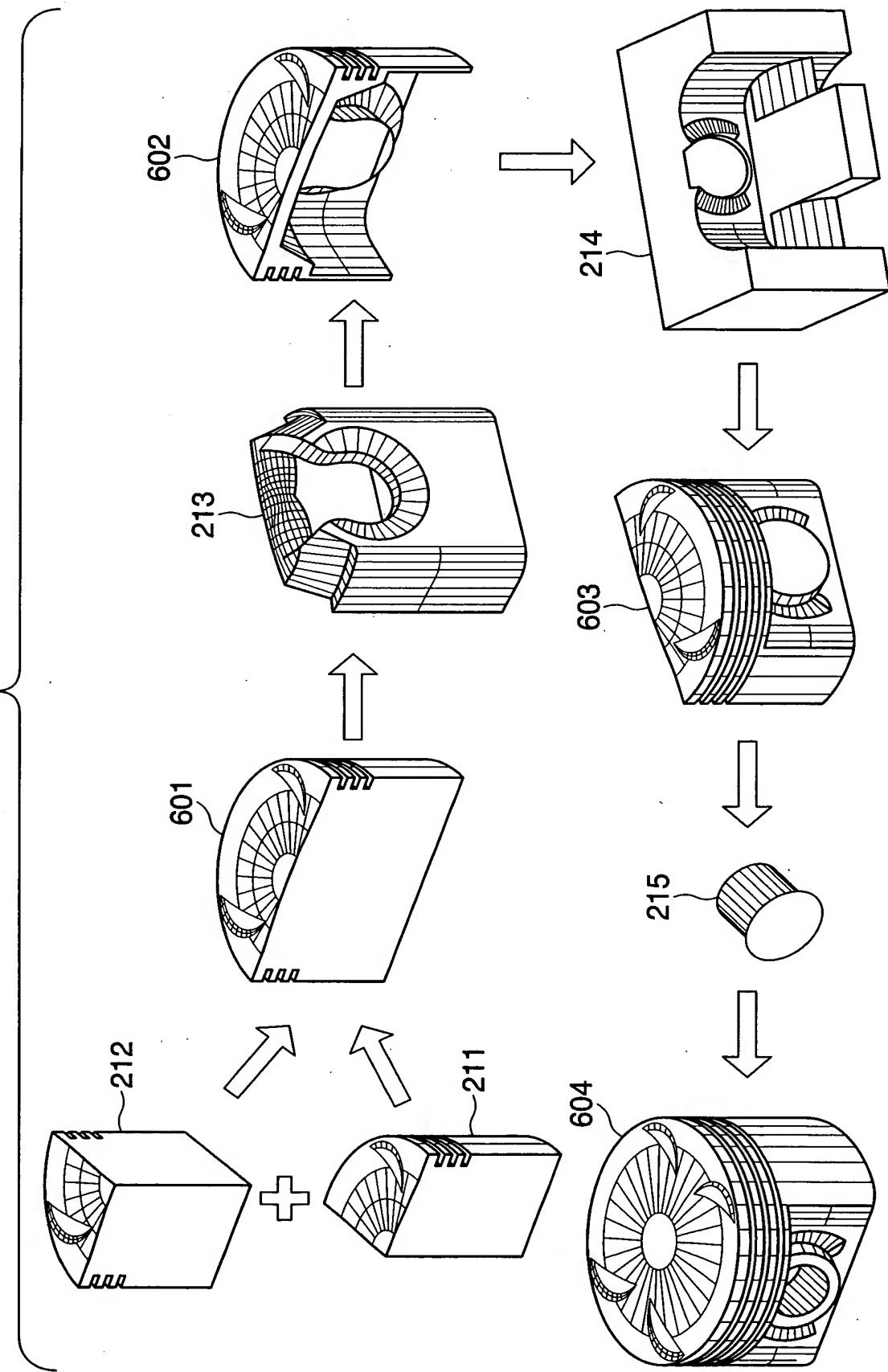
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FIG. 5



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FIG. 6



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FIG. 7A

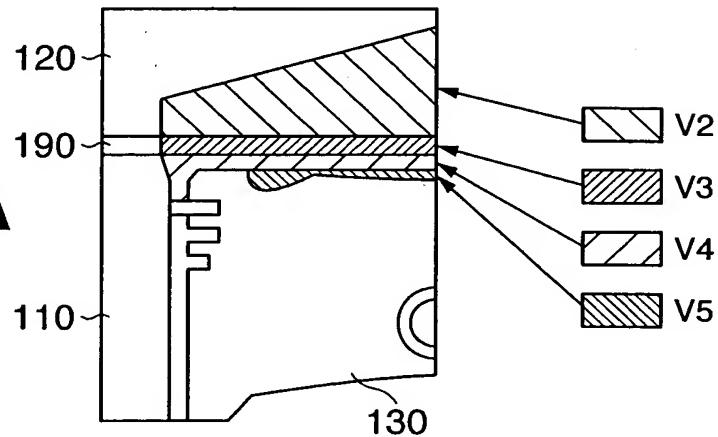
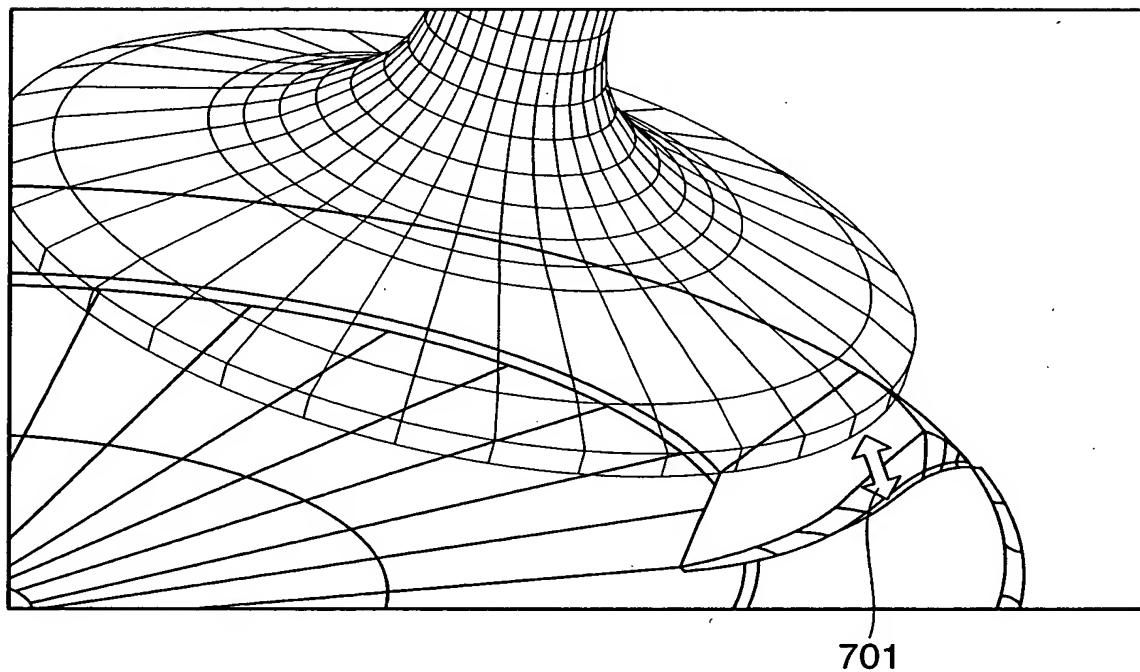
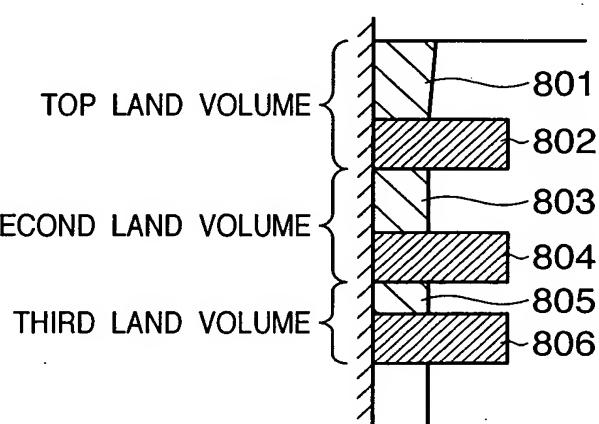


FIG. 7B



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FIG. 7C



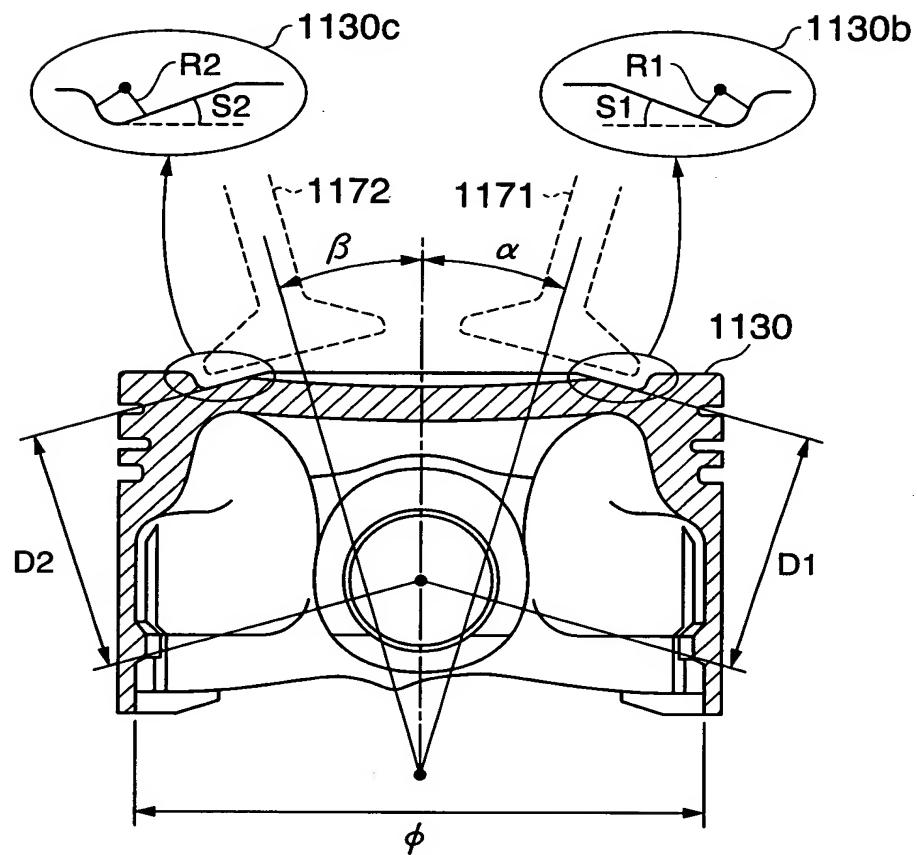
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FIG. 8

3D VERIFICATION RESULT			
<COMPRESSION RATIO>			
• TARGET COMPRESSION RATIO(INPUT VALUE) :		* *.* *	
• COMPRESSION RATIO(MEASUREMENT RESULT FROM 3D MODEL) :		* *.* *	
<GAP AND THICKNESS>		MEASURED	EVALUATION
• VALVE-PISTON GAP		VALUE	
INTAKE VALVE SIDE :		*.* mm	<ok>
EXHAUST VALVE SIDE :		*.* mm	<ok>
• SHORTEST DISTANCE BETWEEN CONNECTING ROD AND CROWN BACK SURFACE :		*.* mm	<ok>
• MINIMUM THICKNESS OF TOP RING CROOVE BACK SURFACE :		*.* mm	<ok>
• MINIMUM THICKNESS OF CROWN BACK SURFACE :		*.* mm	<NG>
<LAND VOLUME>			
• TOP LAND VOLUME :		1+2	*.* * * * * * * * * CC
		1	*.* * * * * * * * * CC
		2	*.* * * * * * * * * CC
• SECOND LAND VOLUME :		3+4	*.* * * * * * * * * CC
		3	*.* * * * * * * * * CC
		4	*.* * * * * * * * * CC
• THIRD LAND VOLUME :		5+6	*.* * * * * * * * * CC
		5	*.* * * * * * * * * CC
		6	*.* * * * * * * * * CC
811		812	
PISTON 3D DISPLAY		INNER SPACE SHAPE DISPLAY	
813		814	
AUTOMATIC OPTIMIZATION		RE-INPUT SPECIFICATION VALUES	
815		SAVE & END	

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F I G. 9A



F I G. 9B

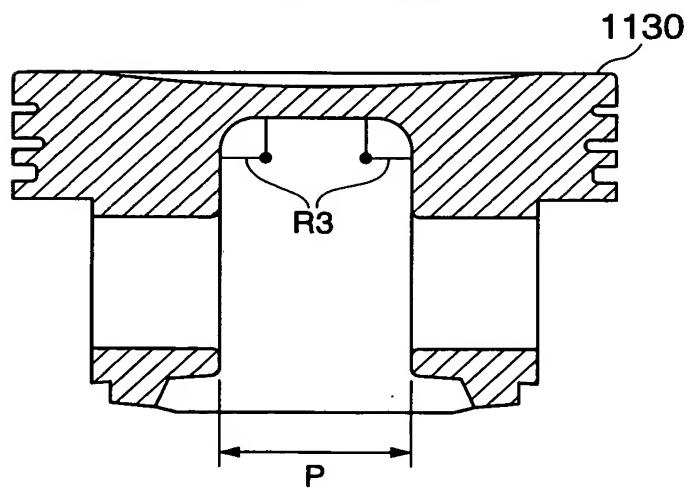
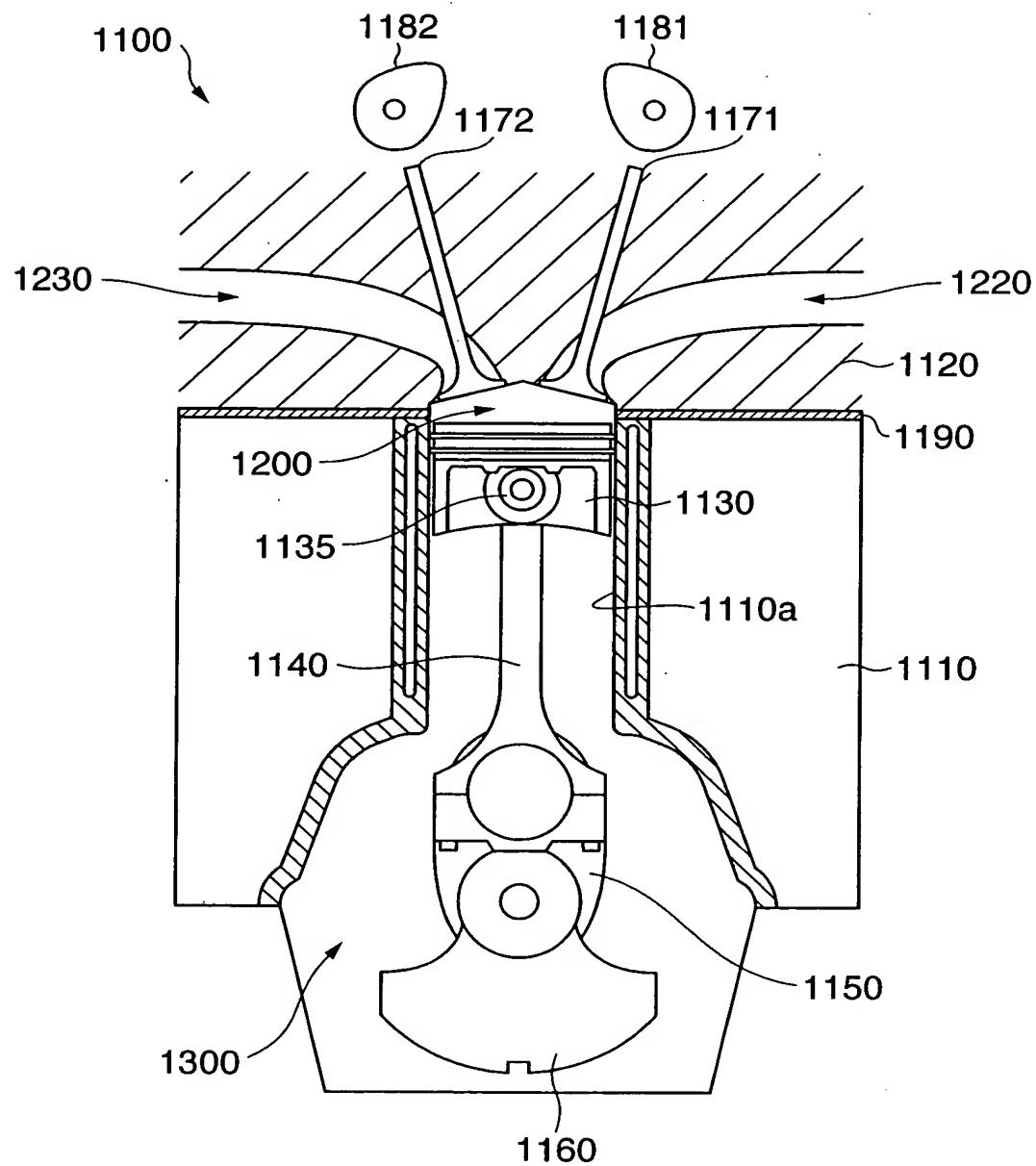
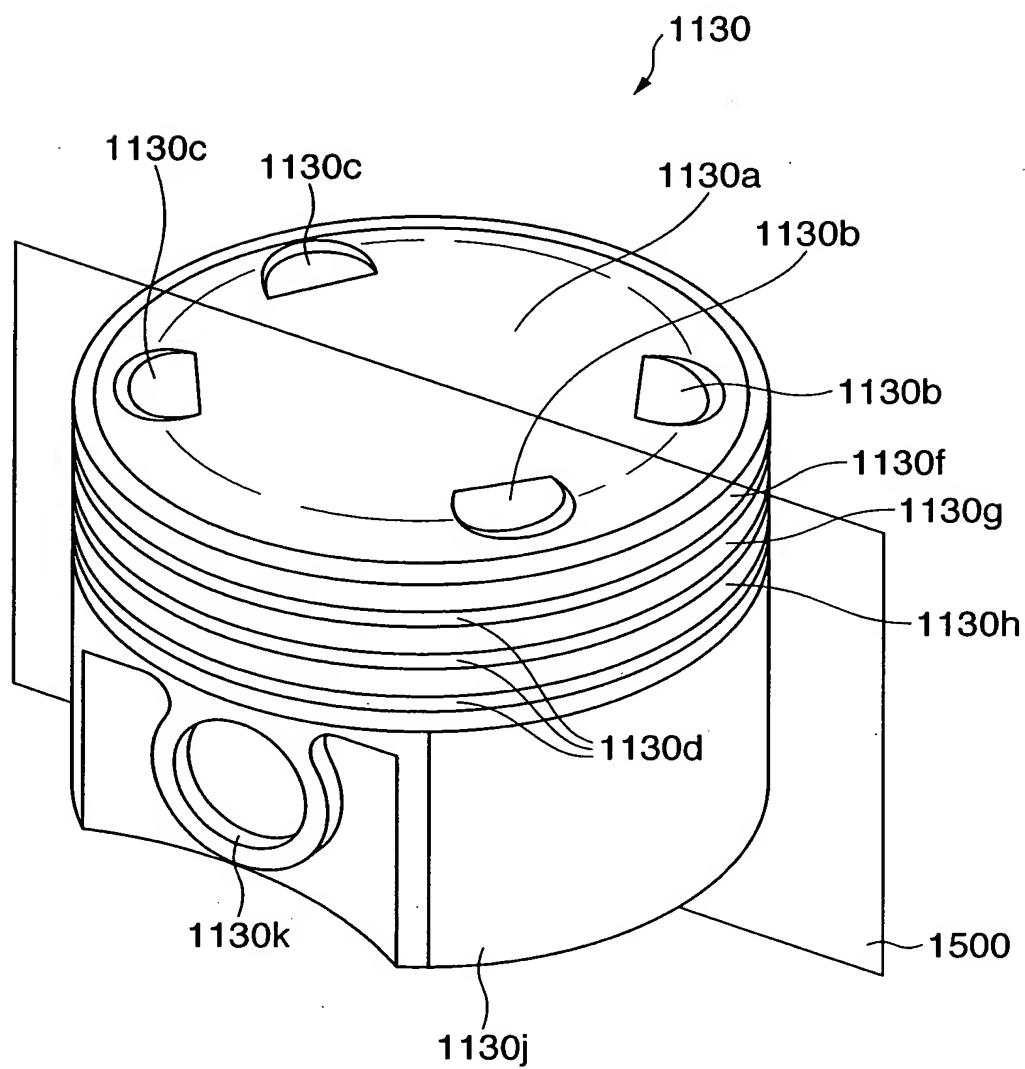


FIG. 10



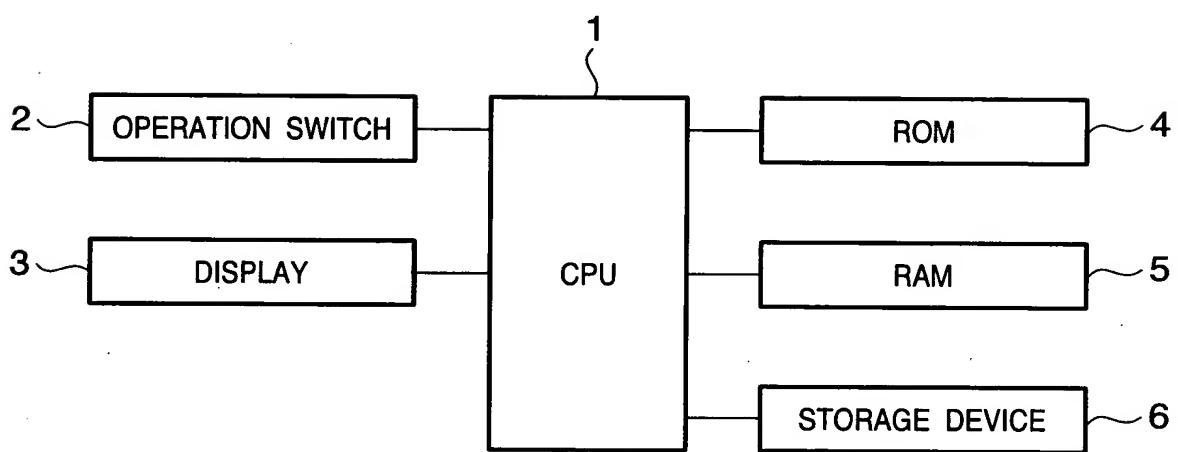
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F I G. 11



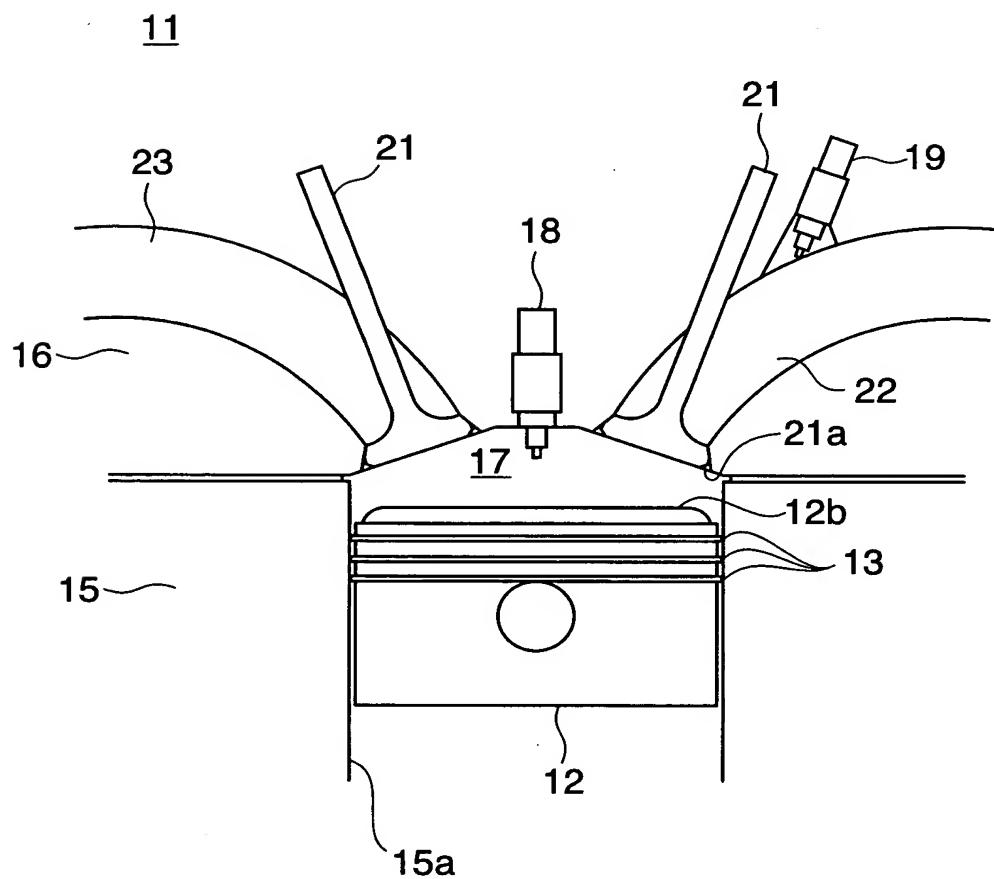
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FIG. 12



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F I G. 13



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F I G. 14

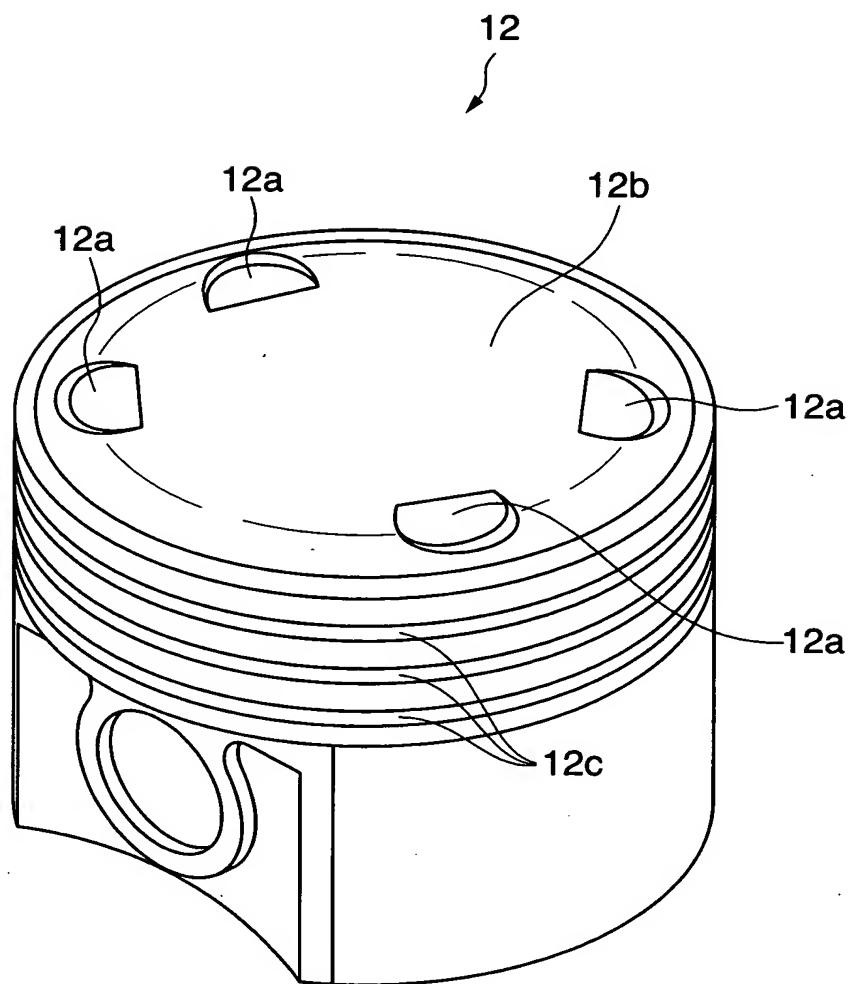
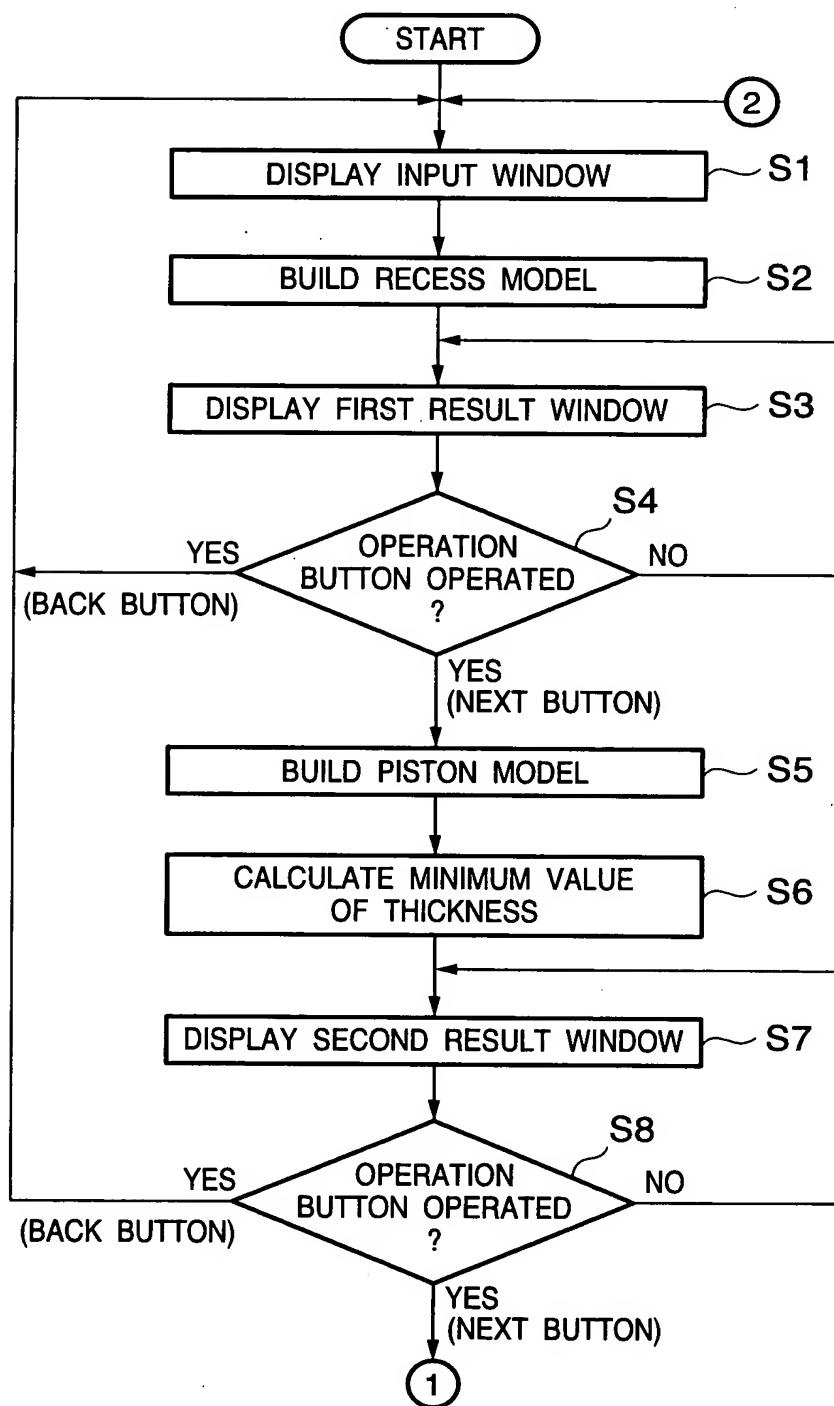


FIG. 15



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FIG. 16

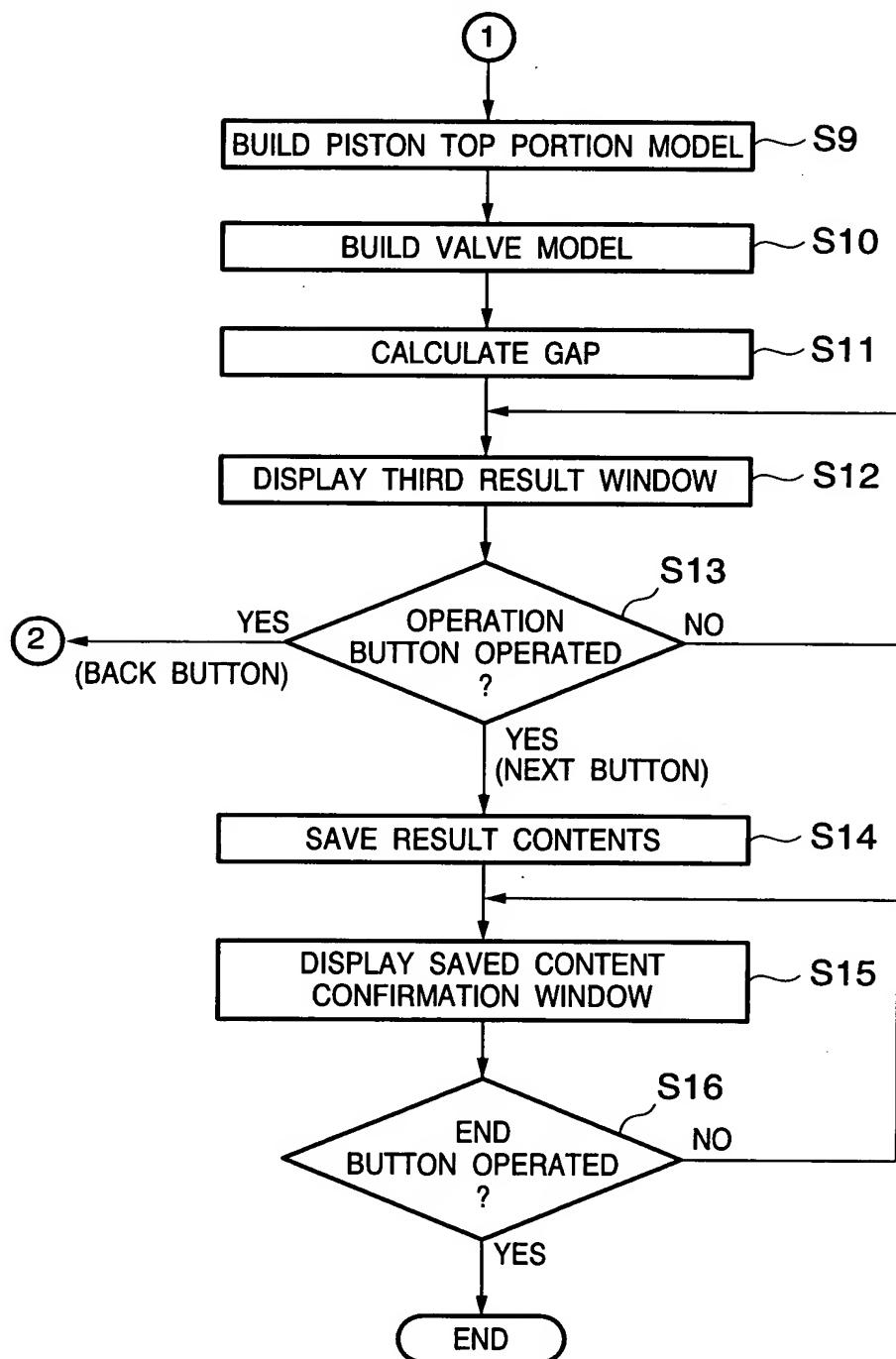
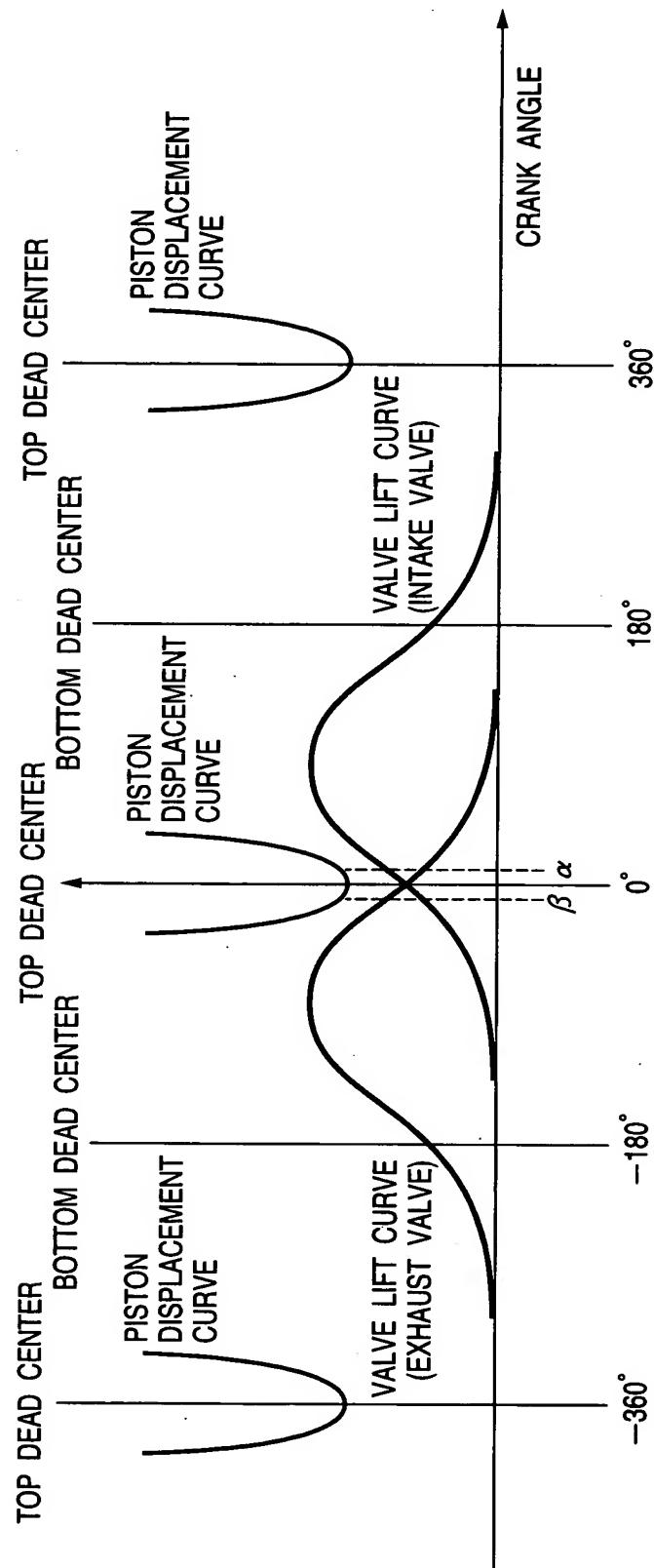


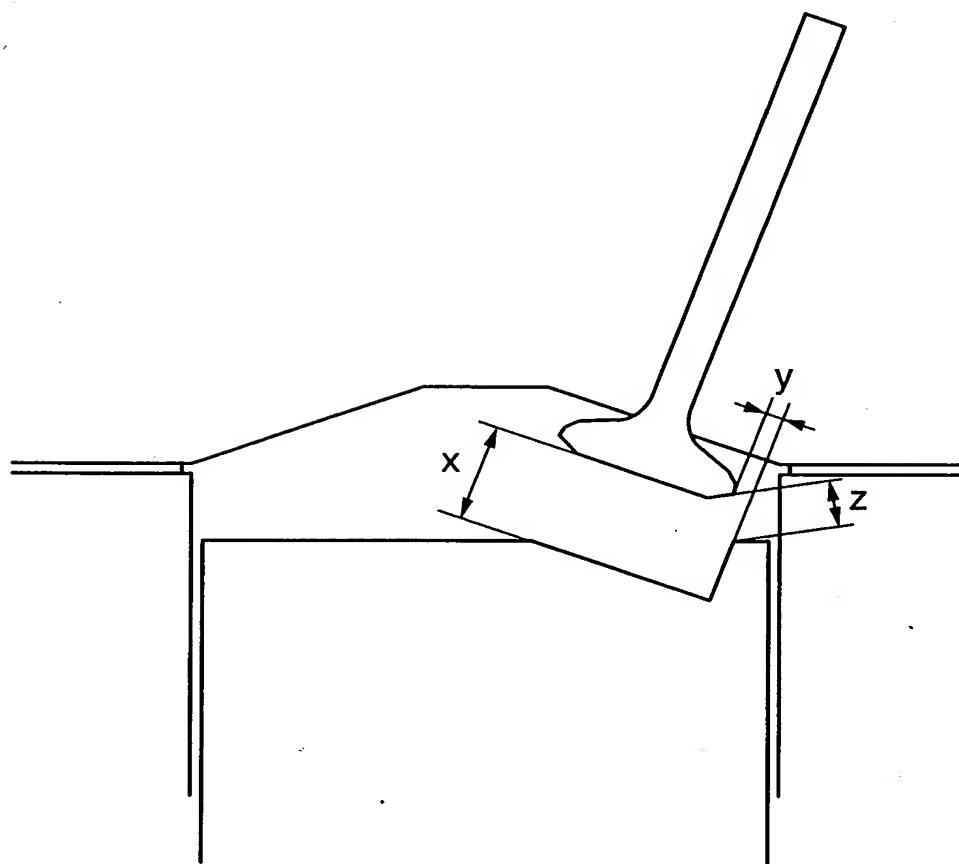
FIG. 17



TITLE: PISTON DESIGN SUPPORT PROGRAM,
DESIGN SUPPORT METHOD, AND DESIGN SUPPORT APPARATUS
INVENTORS: Yasutomo KUSUNOKI et al.
SERIAL NO.: Unassigned
DOCKET NO.: 725.1164

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FIG. 18



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F I G. 19

